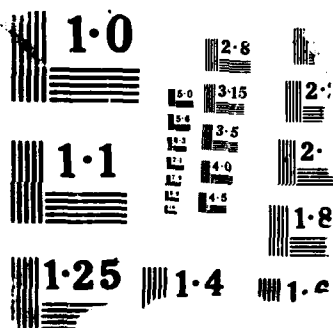


AD-A195 454 THE CAPITAL SHIP: AN OPERATIONAL PERSPECTIVE(U) ARMY 1/1  
COMMAND AND GENERAL STAFF COLL FORT LEAVENWORTH KS  
SCHOOL OF ADVANCED MIL ITARY STUDIES D C MOCK  
UNCLASSIFIED 29 APR 88 F/G 15/6.1 NL

UNCLASSIFIED 29 APR 88

F/G 15/6. 1 NL



AD-A195 454

DTIC  
ELECTE  
JUL 20 1988  
S D  
C&D

The Capital Ship: An Operational Perspective

by

Major David C. Mock  
Armor

School of Advanced Military Studies  
U.S. Army Command and General Staff College  
Fort Leavenworth, Kansas

29 April 1988

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
1a. REPORT SECURITY CLASSIFICATION Unclassified			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited.		
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE					
4. PERFORMING ORGANIZATION REPORT NUMBER(S)			5. MONITORING ORGANIZATION REPORT NUMBER(S)		
6a. NAME OF PERFORMING ORGANIZATION School of Advanced Military Studies, USAC&GSC		6b. OFFICE SYMBOL (If applicable) ATZL-SWV	7a. NAME OF MONITORING ORGANIZATION		
6c. ADDRESS (City, State, and ZIP Code)  Fort Leavenworth, Kansas 66027-6900			7b. ADDRESS (City, State, and ZIP Code)		
8a. NAME OF FUNDING/SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER		
8c. ADDRESS (City, State, and ZIP Code)			10. SOURCE OF FUNDING NUMBERS		
			PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.
11. TITLE (Include Security Classification)  The Capital Ship: An Operational Perspective					
12. PERSONAL AUTHOR(S) Major David C. Mock, USA					
13a. TYPE OF REPORT Monograph		13b. TIME COVERED FROM _____ TO _____		14. DATE OF REPORT (Year, Month, Day) 88/04/29	
15. PAGE COUNT 40					
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number) Capital ship, naval operations, naval posture		
FIELD	GROUP	SUB-GROUP			
19. ABSTRACT (Continue on reverse if necessary and identify by block number) <p>The U.S. being a maritime nation, protected yet seperated from the world by oceans has needed the oceans as highways for economic and military power projection. A fundamental requirement for power projection is command of the sea. Having command of the sea means having control of ocean transit, securing it for one's self and one's allies while denying it to one's enemies. Command of the sea is seized and maintained by a strong navy centered around powerful warships.</p> <p>These powerful warships--capital ships--have evolved over time, constantly shaped by mission, threat, geography, technology and resources. From the Constitution-class frigates at the founding of the Navy to the nuclear powered aircraft carriers of today, U.S. Navy fleets have centered around the capital ship. A reciprocal relationship exists between the capital ship and the posture of the Navy. This paper seeks to determine to what degree the capital ship has determined the strategic and operational posture.</p> <p>It begins by offering a tentative definition of the capital ship through examination of</p>					
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION Unclassified		
22a. NAME OF RESPONSIBLE INDIVIDUAL Major David C. Mock			22b. TELEPHONE (Include Area Code) (913) 684-3437		22c. OFFICE SYMBOL ATZL-SWV

the thoughts of key naval theorists, particularly Bernard Brodie, Alfred T. Mahan and Clark Reynolds. From this point of departure the paper examines the evolution of the capital ship in the U.S. Navy from 1794 to the present. Based on the assembled theoretical and practical evidence, the paper then presents a comprehensive definition of the capital ship.

The paper then explores the concept of command of the sea and examines the relationship between the capital ship and the posture of the Navy in attaining that command. The paper concludes with the notion that the capital ship and the posture of the Navy are reciprocal, that the capital ship is both creator and creation of the Navy's operational and strategic posture. In an age of uncertainty where the U.S. Navy must be prepared for a wide variety of potential conflicts, its capital ship and posture at the onset of conflict will dictate how it will fight the war.

The Capital Ship: An Operational Perspective

by

Major David C. Mock  
Armor

School of Advanced Military Studies  
U.S. Army Command and General Staff College  
Fort Leavenworth, Kansas

29 April 1988



Accession For	
NTIS CRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

88-2879

APPROVED FOR PUBLIC RELEASE:  
DISTRIBUTION UNLIMITED.

School of Advanced Military Studies  
Monograph Approval

Name of Student: David C. Mock  
Title of Monograph: The Capital Ship: An Operational  
Perspective

Approved by: James R. McDonough Monograph Director  
Lieutenant Colonel James R. McDonough, M.S.

L.D. Holder Director, School of  
Colonel L.D. Holder, M.A. Advanced Military Studies

Philip J. Brookes Director, Graduate Degree  
Philip J. Brookes, Ph.D. Program

Accepted this 11th day of May 1988

## ABSTRACT

The Capital Ship: An Operational Perspective  
Major David C. Mock, USA, 40 pages.

15  
The ~~United States~~ being a maritime nation, protected yet separated from the world by oceans, has needed the oceans as highways for economic and military power projection. A fundamental requirement for ~~power projection~~ is the command of the sea. Having ~~command of the sea~~ means having control of ocean transit, securing it for one's self and one's allies while denying it to the enemy. Command of the sea is seized and maintained by a strong navy centered around powerful warships.

These powerful warships--capital ships--have evolved over time, constantly shaped by mission, threat, geography, technology and resources. From the Constitution-class frigates at the founding of the Navy to the nuclear powered aircraft carriers of today, U.S. Navy fleets have centered around the capital ship. A reciprocal relationship exists between the capital ship and the posture of the Navy. This paper seeks to determine to what degree the capital ship has determined the strategic and operational posture.

It begins by offering a tentative definition of the capital ship through examination of the thoughts of key naval theorists, particularly Bernard Brodie, Alfred T. Mahan and Clark Reynolds. From this point of departure the paper examines the evolution of the capital ship in the U.S. Navy from 1794 to the present. Based on the assembled theoretical and practical evidence, the paper then presents a comprehensive definition of the capital ship.

The ~~paper~~ then explores the concept of command of the sea and examines the relationship between the capital ship and the posture of the Navy in attaining that command. The paper concludes with the notion that the capital ship and the posture of the navy are reciprocal, that the capital ship is both creator and creation of the Navy's operational and strategic posture. In an age of uncertainty where the U.S. Navy must be prepared for a wide variety of potential conflicts, its capital ship and posture at the onset of conflict will dictate how it will fight the war.



## Table of Contents

	Page
1. Introduction.....	1
2. Defining the Capital Ship	
Origins.....	4
Evolution of the Capital Ship in the U.S. Navy.....	8
The Definition Revisited.....	31
3. Command of the Sea, The Capital Ship and The Posture of the Navy.....	33
4. Conclusion.....	39
Endnotes.....	41
Bibliography.....	43

## INTRODUCTION

*The primary aim of naval war is the command of the sea. Any other aim is the acceptance of a position of inferior naval power, and the abnegation of all hope of success.*

*-P. H. Colomb, 1899<sup>1</sup>*

Geography has been nature's great gift to the United States. Throughout the history of civilization, of all the great nations of the world, the United States alone has been given a rich and resourceful land comforted by a temperate climate and insulated from a hostile world by the seas.

In her infancy America's ocean frontiers protected her growth. They allowed her to focus on establishing a strong foundation and developing a hearty nation relatively secure from outside interference. Her abundant wealth of raw materials not only assured her self-sufficiency, but also provided her with prized commodities for exchange through international commerce.

However, the oceans that were an obstacle to hostile invasions would also be obstacles to economic growth and thus national power unless the new nation became a strong sea power. Sea power has two parts: merchant shipping and the naval power to protect it. At its independence, the American merchant fleet was in place and steadily growing. However, with that independence, the U.S. merchant fleet lost its protection from the Royal Navy. Although it was an unwanted burden at the time, conditions compelled the United States to establish an American Navy.

There are several significant interrelated elements that frame the design and construction of a navy. The first, of course, is its mission, the end result that must be achieved, the *raison d'être*. The second element is the threat: Who is the potential enemy and what are his capabilities? Linking these two are geographical conditions, the third consideration. This takes into consideration the relative locations of the potential enemies, the conditions of their ports, harbors, coastlines, and the possession or use of forward bases from which to operate. The fourth element is technological: how "modern" can the fleet be and how soon will it be eclipsed by newer technologies? Last is resources. After all else is laid out, a nation must consider the size and type navy it can afford to build, man, sustain and maintain. Further, what natural and man-made resources are obtainable from within the country, and what must be procured from foreign sources.

The relationship of these five dynamic elements changes frequently. It must be reviewed and reexamined continually to ensure the relevancy of the force. In the U.S. Navy these varying elements usually cause evolutionary change but occasionally institute revolutionary innovation. These interrelated elements have caused the Navy to grow from a small defensive force at its inception to the most powerful naval force in the world.

In its beginning and still today the center of the fleet, the core around which operations are designed, is the

capital ship. The five elements of force design have caused the capital ship to evolve from the Constitution-class frigates<sup>2</sup> of the new U.S. Navy to larger ships of the line. They have caused dramatic changes from sailing ships of the line to steam powered frigates and turreted iron gunboats. With each change in capital ship, however, there has also been an accompanying change in the operations of the fleet, and following from that, a change in the operational and strategic posture of the navy.

The purpose of this paper is to ascertain to what degree the capital ship has determined the strategic and operational posture of the U.S. Navy. To establish a common point of reference the paper will first examine the term "capital ship" from the points of view of some naval theorists and will then trace the history of the evolution of the capital ship in the U.S. Navy. The paper will then examine the role the capital ship, and therefore the fleet, in securing and holding command of the seas. In conclusion it will explore how the capital ship has affected the operational design of the navy and how that design has affected in turn the strategic posture of the nation.

## Defining the Capital Ship

### Origins

The term capital ship first appeared officially in the Washington Naval Conference of 1921. One of the aims of the conference, driven in part by postwar worldwide economic conditions, was to limit the naval arms race. The conference resulted in several multilateral treaties, but it was the Five-Power Naval Limitation Treaty that defined the capital ship.

It was clear to all the signatories that the index of naval might was the capital ship, at that time the battleship. Agreements for the limitation of naval strength were directed toward the capital ship, which by their definition was "any surface vessel of war, other than aircraft carriers, mounting guns of a caliber of 8 inches and displacing more than 10,000 tons".<sup>3</sup>

The Five-Power Naval Limitation Treaty, a product of the conference, placed a ten year ban on the construction of battleships and limited the overall tonnages of battleships for the five signatories, the United States, Britain, Japan, Italy and France. Although it limited tonnages for aircraft carriers as well, the limit was well beyond the actual tonnage of ships in service or in construction. Therefore, naval budgets that would have been funneled into the construction of new battleships were channeled into the experimentation and refinement of sea-based naval aviation

and submarines. This was a particularly interesting oversight for within the next generation the "index of naval strength" would no longer be the battleship but the aircraft carrier.

The term capital ship was not used by Alfred T. Mahan, the great naval strategist of the 19th century. Nonetheless, the concept behind the definition for the 1922 conference is linked directly to his ideas of naval warfare. The development of his concept of "command of the sea" was based on historical analysis of sea power throughout the ages. Command of the sea was a necessary condition for the promotion of national and economic power. The central theme of seizing and holding command of the sea could only be realized through the concentration of powerful warships for a decisive naval battle to destroy, forever, the enemy naval threat. "...[T]he possession of that overbearing power on the sea which drives the enemy's flag from it, or allows it to appear only as a fugitive; and which, by controlling the great common, closes the highways by which commerce moves to and from the enemy's shores. This overbearing power can only be exercised by great navies..."<sup>4</sup>

In Mahan's historical analysis of the application of decisive naval battles, the index of naval power was the ship that was a reflection of the five elements of design: mission, threat, geography, technology and resources. The capital ship was the premier warship of a fleet which, at a

particular time in history, represented the concentration of the fleet's power.

In concept, Mahan and the Five-Power Naval Limitation Treaty were in agreement that the "index of naval strength" was the ship that represented the concentration of power of the navies. However, upon a more detailed examination, the term "capital ship" has a much wider definition than merely referencing the ship that is the most powerful warship of the fleet. Since the capital ship was in essence the core of the fleet, and fleet operations were designed around it, the capital ship was the central ship upon which rested the mission of the fleet and therefore the posture of the navy. In other words, if the mission of the navy was defensive, the resulting capital ship might be a monitor-type gunboat. If that were the case, the navy would not be postured for an offensive mission which would require a completely different type of ship.

In *Command of the Sea*, Clark Reynolds clarifies the definition of the capital ship as: "...the largest warships of the modern and contemporary periods. These latter, often called capital ships, have usually been the yardstick of naval power, the ship-type around which the tactics of the fleet are formulated."<sup>2</sup> Although the capital ship has changed during the modern and contemporary periods it has always been the yardstick and central force in the fleet, but it has not necessarily been the largest ship. An example is the battleship and the aircraft carrier in World

War II. The largest American ships of the war were the fast battleships of the Iowa-class at 45,000 tons, but the capital ship was the aircraft carrier which had a displacement between 20,000 and 30,000<sup>+</sup> tons. The difference was not so much the size, but the concentration of firepower. Whereas the *USS Iowa* mounted nine 16 inch guns that could range out to 35,000 yards, the *USS Essex* carried a complement of about seventy aircraft that had an operating radius of over 300 miles.

The common thread of the three perspectives is that the capital ship is the index or yardstick of naval strength, it is the concentration of power within the fleet (center of gravity), and it is the core around which is formed the fleet operations. With this interpretation in mind, the paper will focus on the evolution of the capital ship in the United States Navy.



## Evolution of the Capital Ship in the U.S. Navy

### Beginnings

The foundation of the U.S. Navy was laid in its combat performance during the War for American Independence. When independence was won, however, the impoverished and barely solvent new democracy viewed the requirement for a navy to be an expensive and unwarranted encumbrance. Its frontier, after all, was protected from invasion by a great ocean. Therefore, the fledgling navy of the revolution was disbanded and its ships taken out of commission.

But essential to the survival and growth of the new independent nation was the establishment and maintenance of international commercial relationships. The birth and growth of the American merchant fleet began under the wardship of England. But with independence, the shield of the Royal Navy was lifted from the American merchant fleet. The great oceans that provided a secure frontier now proved to be a long and dangerous highway for American maritime commerce without protection from the new government.

American merchant ships were visiting ports throughout the world, with most of their ports of call in Europe, the Mediterranean and the Caribbean. It was the vulnerability of the U.S. merchant fleet that created the condition that eventually forced Congress to pass the legislation known as the Navy Act of 1794. In the first few years of the democracy, commercial tonnage quadrupled from 124,000 tons

in 1787 to 439,000 tons in 1791.<sup>7</sup> From a maritime perspective the period was known as the *Pax Britannica*<sup>8</sup> wherein the Royal Navy provided a certain safety for all who used the sea. However, in the eastern Atlantic and western Mediterranean it was customary for non-British merchant ships to pay tribute to the many Barbary kingdoms for the safe conduct of their cargoes. Those who did not pay tribute were at risk of having their cargoes confiscated, their ships captured, or their crews impressed. The United States found that paying tribute was a cheaper form of protection than having a navy--until 1794.

#### 1797: Constitution-Class Frigate

The Navy Act of 1794 created the Navy, but it was the five elements of design-- mission, threat, geography, technology, and resources that established the parameters for the architecture of the Navy and its ships.

The mission was simple. Provide security for the American merchant fleet operating outside of American home waters, initially in the eastern Atlantic and the Mediterranean. The naval threat came from enemy ships that ranged in size from small sloops and privateers to large 74-gun ships of the line. The U.S. ships, therefore, would need the necessary speed, armor and armament to combat the strongest and the swiftest of enemy ships.

Funding, although meager, was appropriated for the construction of six frigates. Type classification for ships of the time was determined by the number of gundecks and length (the net effect of the two variables was a determinant for the number of guns that could be mounted per side). Frigates of the late eighteenth century normally mounted twenty to thirty guns on a single gundeck. The American frigates, however, mounted 36 and 44 guns (three were built with 36 guns and three mounted 44) and were designed to incorporate the size and survivability of the large ship of the line while retaining the speed and handling of the smaller frigates. They were made of prized American oak which made them stronger than any other ships afloat. Although their keel length was almost equivalent to an average 74-gun ship of the line, their beam was much narrower, giving them an advantage in speed and maneuverability. Their unique design made them faster, stronger and more maneuverable than the British 74-gun ship of the line. What they could not outgun in battle they could speed away from to fight under more favorable conditions.

As powerful as the American frigates were, their overall numbers made the U.S. naval strength relatively small. However, that strength was sufficient to fight the Barbary pirates in the Mediterranean and later the French in the Caribbean by blockading their ships in port or by forcing them to fight under disadvantageous conditions. In both cases overall numerical inferiority was counterbalanced

by the ability to concentrate superior naval power against the enemy at decisive points. Only by offensive action could the Navy concentrate its strength and accomplish its mission of defending American maritime commerce in such a large maritime theater.

By 1805, the threat to the disruption of American commerce had subsided. The distant blockades against the Barbary pirates in the Mediterranean and the French in the Caribbean had been successful. Considering the five elements of design, the Constitution-class frigates were matched ideally to the mission and the offensive orientation of the Navy. To execute its defensive mission the Navy assumed an offensive posture. This would be a fundamental precept for the U.S. Navy.

However, the conclusions drawn by the Jefferson Administration were much different. From its perspective, American interests and the American homeland could best be defended by a less offensive navy. Instead of defeating the enemy away from U.S. shores, a navy of coastal gunboats integrated with defensive fortifications along the coast would provide the same security without posing an offensive threat.

Thus, the Navy was reduced in size and realigned in mission to defend the coast of the nation. Construction of frigates ceased and funds were diverted to the construction of a defensive navy. The fallacy in this approach was realized in the War of 1812 against Britain. The defensive

posture, reflected in the coastal gunboats, gave the British the initiative and the ability to concentrate its superior naval forces at will against the diffused, defensive U.S. Navy.

But despite the conservatism of the Administration and its efforts to reduce the offensive actions of the Navy, the nation had gained an appreciation for its first capital ship, the Constitution-class frigate, and the role it could play in gaining command of the seas.

As Britain and France moved toward war in 1812, the Royal Navy began to intercept foreign goods destined for France to support the war effort. Initially, the Royal Navy boarded neutral shipping on the high seas to inspect the contents, selectively confiscated them, and on occasion destroyed or captured the merchant ships and impressed their crews. As the war expanded, the Royal Navy blockaded the entire U.S. Atlantic coast and severely restricted American maritime commerce, with devastating impact on the American economy.

The coastal gunboats demonstrated the flawed logic of defensive naval warfare in that the British were able to mass their fleet without interference and land amphibious forces at points of their choosing against the thinly dispersed fleet.

The lesson learned by the United States Navy was that a coastal defensive navy allows an enemy to concentrate its fleet when and where it chooses. It does not protect

commerce outside the coastal defense. It does not destroy the enemy's commerce, nor does it remove the enemy force from one's shore. A national defensive policy does not necessarily mean a defensively postured navy. Although the Jefferson Administration knew a defensively postured navy would not be a provocative force, it was soon to learn that neither was it a very effective force.

#### 1850's: The Steam Frigate

The period after the war of 1812 changed the nation and its Navy rapidly. Technological innovations provided new and radical solutions to old problems, particularly in the Navy. Innovations in metallurgy had significant effects on gun design, extending ranges and increasing caliber as well as providing effective techniques for the manufacture and application of protective armor covering for wooden hulls. This in turn stimulated the search for more powerful propellants and explosives to penetrate the armored ships. But the most momentous change was the advent of steam propulsion. Although it was slow to be incorporated, its impact on naval operations would be unprecedented. For centuries navies had been held hostage by the wind; now they could move freely.

The Navy incorporated steam power more slowly than did the merchant fleet, primarily because the side mounted paddle wheels occupied much of the broadside that normally housed gun positions. Additionally, hostile fire could

easily damage the engine and power transmission equipment mounted in exposed positions above the water line. However, the advent of the screw propeller and innovations in steam locomotion overcame both of those problems and the steam powered warship joined the Navy.

Technological refinements in U.S. warships after the conclusion of the War of 1812 increased their size and power until they became true ships of the line. But by the 1850's they too were being replaced by the steam-powered frigate. Within the next decade the steam frigate had become the centerpiece of the fleet. Although the capital ship had changed, the mission of the U.S. Navy had not. The nation's isolationist attitude would not support a navy other than to provide a coastal defense and, if necessary, to punish the enemy by raiding his commerce. This view dictated the operational posture of the U.S. Navy throughout the century and would until 1861.

#### American Civil War: Steam Frigate or Iron Gunboat

There was not a single, climactic Civil War naval battle in which the Union Navy seized command of the sea. Still, the effect of the Union Navy was decisive in accomplishing the Union strategy. It did not win the war, but it established the conditions for the defeat of the Confederacy.

Based on the Navy's traditional role of blockade and commerce raiding, U.S. maritime strategy expanded during the

war to include a new function, namely joint army/navy "brown water" operations. These aimed at controlling major river networks, the Confederate lines of communication. In designing its naval strategy the Union recognized the relative inferiority of the Confederate Navy and the resources from which it could draw, specifically, its limited naval shipyard capacity and weak industrial base. It recognized that the agrarian-based South could not sustain the war without significant external assistance carried by merchant shipping, Confederate and foreign. Further, the 3500 mile long Southern coast line would be difficult to blockade successfully without a large investment in warships. Moreover, controlling major rivers was equally important as the coastal blockade in depriving the Confederacy of its ability to sustain the war.

If, as previously defined, the capital ship is the "yardstick of naval power, the ship-type around which the tactics of the fleet are formulated", the Union Navy had two capital ships, one for each mission. The Navy's traditional roles of blockade and commerce interdiction required a ship that could remain at sea to enforce a blockade and to interdict and capture enemy commerce, a ship that could overpower its opponents with arms yet be fast enough to run down potential blockade runners. This was the steam frigate. Conducting "brown water" operations for the control of the major rivers and port facilities required a shallow draft boat that could destroy enemy warships and



survive battles with shore batteries. This was the iron gunboat.

The "yardstick of naval power, the ship-type around which the tactics of the fleet are formulated" seems to be an incomplete definition at this point because there cannot be two capital ships in the navy any more than there can be two centers of gravity for an army. But to complete the analysis of the capital ship, a comparison of the net effect the two ships had on the outcome of the war must be made. Although important results were gained by the iron gunboats in controlling the rivers, the focus of the navy remained on the coastal blockade mission. The blockade had a devastating impact on the Confederacy, weakening her economically and militarily to the point that she finally collapsed under the blows of the Union Army.

For the Union Navy there was only one capital ship in the Civil War: the steam frigate. It was the center of the coastal blockading fleets and it was from these steam frigate fleets that the greatest contribution was made to the defeat of the Confederacy.

However, the most profound and lasting effect on the Navy was made by the gunboats, particularly the Monitor-class gunboats. For its time, the Monitor-class gunboat was the culmination of technological innovation. It was truly an iron ship, not just iron-clad, and incorporated the most modern steam propulsion. Its armament, housed in a rotating turret that provided protection against the largest enemy

guns, thus changed naval tactics from the historical broadside method of engagement. Its radical design was a complete departure from any previous ship and would have a tremendous effect on future ship design and the posture of the U.S. Navy.

#### 1880's: The Cruiser

The nation emerged from the Civil War focused on healing its wounds and restoring the Republic. The public paid little attention to international affairs. An isolationist policy and an austere defense budget drastically reduced American naval power. Much of the American navy was moth-balled, sold to foreign governments, or converted to commercial enterprise. The small surviving Navy resumed its traditional mission of defending the American shores. Force design and professional thought reflected the defensive mission.

However, events made possible by the Industrial Revolution were rapidly changing the world and how Americans viewed it. The first trans-Atlantic telegraph cable in 1866 linked the United States with Europe while the American trans-continental rail road in 1869 united the U.S. coasts, reinforcing the need for a strong two ocean navy.

As America emerged into the late 19th century, it quickly became one of the more affluent nations of the world. American natural resources and industrial might enabled it to match the great European naval powers of

France, Italy and Britain in producing a navy to represent its power to the world. Slowly, the focus of the nation began to shift beyond its shores. Slowly, America was taking her place in the world as a major player, if not yet a leading one.

By 1880 technology had overcome numerous problems in ship design that previously had limited range, power, armor and speed. In the years since the Civil War, innovations in ship construction had replaced iron hulls with steel. Improvements in armor protection matched increases in the range and lethality of naval cannon. Modern ships now mounted rifled cannons in revolving turrets. Propulsion systems became more powerful, making it possible to build larger, heavier ships that could go farther and faster than ever before. But most importantly for the Navy, by 1880 the prodigious transformations in military technologies leveled off to the point that ships could be constructed without quickly becoming obsolescent.

But, as important as technological innovation was to modernizing the Navy, technology alone could not change the Navy's posture. It only provide the means. The beginning of the transformation sprang from a new American attitude and philosophy in foreign policy. As this changing American perspective of its role in world affairs began to take root it was reflected in a changing military posture, particularly in the Navy.

At this same time the Navy was searching for more effective methods of defending American interest beyond its traditional role of commerce raiding and coastal defense. It began to generate the notion that commerce raiding and coastal defense were the only military solutions for a defensively tailored force. Thus the Navy began to think of defending American interests and American coastlines in terms of a more offensively structured fleet and began to build the cruiser, its new capital ship, to fulfill that mission.

Therefore, as the Navy incorporated the larger, faster and more powerful cruisers into the fleet it was moving away from being a traditional defensively postured force to a more offensive one. The projection of a strong naval force far from home waters would protect America's distant overseas' interests and maintain strong economic alliances. The cruiser, the state of the art in warships in the 1880's, was the capital ship that reflected this broader view of America's role in the world and a broader vision of American naval power.

#### 1890's: The Battleship

The era begun in the last decade of the 19th century might be seen as a revival of the U.S. Navy, but, in fact, it was an altogether new epoch in naval thought. For the nation and the Navy, it was a time in which their roles were to be expanded beyond any previous time in history. It was

an era ripe for the coalescing of new notions, concepts and policies of American power, of technologies provided by the industrialization of the nation and of the vast resources of the growing land. It was a time unique in history when all of the requisite factors aligned themselves to change fundamentally America's position among the world powers.

Although not the sole advocate of American imperialism, Mahan was certainly one of the most influential in changing how the United States viewed its role in the world and specifically how the navy could secure that position. This required a different view of naval power than the defensive one traditionally executed by the U.S. Navy. Mahan stated:

however defensive in origin or in political in character a war may be, the assumption of simple defense in war is ruin. War once declared, must be waged offensively, aggressively. The enemy must not be fended off, but smitten down. You may then spare him every exaction, relinquish every gain; but till down he must be struck incessantly and remorselessly.<sup>9</sup>

This requires "the possession of overbearing power on the sea...This overbearing power can only be exercised by great navies".<sup>10</sup>

Before the 1890's the defensive design of the Navy, reflected in its capital ship, the cruiser, was a mirror of national policy. Conventional wisdom was that the U.S. fleets, centered around a fast cruiser, could convincingly interdict enemy commerce, and when confronted by a superior naval force could avoid decisive battle. The U.S. Navy's ability to destroy enemy commerce would be a sufficient

deterrent for a potential enemy. The U.S. Navy was designed to deny the enemy control of the seas but could not secure it for itself. Mahan and his like-minded contemporaries articulated the ruinous effect of that logic.

As this new American ideology was taking form in thought, American shipyards were building new ships to form it in fact. The need for faster, farther ranging and more powerful ships to execute a strategy based on the offensive was filled by the new capital ship, the battleship. By 1890, technology and ship design had reached a pinnacle manifested in the battleship. It was designed for the "decisive battle" to control the seas. It would be the new capital ship of the U.S. Navy and would determine the form and tactics of the Navy for the next half century. For the United States this was the beginning of its new role as a great sea power and a major world power.

The Naval Bill of 1890 was the milestone that marked the new era in American naval thought. Appropriations from that bill authorized the construction of the first American battleships, *USS Oregon*, *Massachusetts*, and *Indiana*.<sup>11</sup> Although somewhat smaller than the British battleship, they were as formidable as any ship afloat. As the ships entered service, the U.S. Navy changed slowly but steadily from a coastal defensive force to an offensive force aimed at securing U.S. interests abroad. As G.T. Davis stated in his book on the development of modern naval policy, in the new era "[t]he Jeffersonian harbor gunboats, the war of 1812

policy of commerce raiding, [and] the Civil War type of monitor were reduced to an auxiliary function." The battleship "...became the basis of the new strategy"<sup>12</sup> The naval bills throughout the decade and beyond continued to reflect this capital ship concept.<sup>13</sup>

While the Spanish American War ended the century, it also opened a new epoch by reinforcing the correctness of the new offensive posture. It demonstrated the prowess of the Navy as it challenged the old world balance of power, and it validated the concept of a "great navy" centered around a battleship capable of "sweeping the enemy from the seas". But, beyond these important lessons, it gave credence to America's claim as a world power.

The naval victories at Manila Bay and Santiago clearly demonstrated the power of a "great navy" and in particular the battleship. This resulted in a program of naval construction up to WW I that concentrated almost exclusively on building faster, stronger, and more powerful battleships. The wisdom was that because of the relatively high investment in time and resources required to build a battleship compared to the smaller ships in the fleet, it would be more logical to focus first on battleship construction. That would immediately increase "the index of naval strength" of the U.S. Navy. Once the required numbers were attained, the effort could shift to building the smaller auxiliary ships of the fleet. This decision, in fact, made the U.S. Atlantic (Great White) Fleet the most

powerful fleet in the world, when, by 1907, it possessed sixteen battleships

The decision, however, left the United States ill equipped for its role in the battle at sea in the First World War. By the "index of naval strength" the U.S. Navy was one of the world's most powerful navies. But, at the war's outset the fleet was not in balance, instead was heavy in battleships and insufficient in anti-submarine warfare and mine sweeping capabilities.

America's naval actions in WW I were not the dramatic battles expected from its Spanish American War experience. Its battleships were infrequently used against the German Navy's surface fleet, and never in a decisive battle. The focus of her naval campaign was on the much less glamorous but equally essential action of ensuring the safety of convoys bound to Europe. This mission revealed the inherent weaknesses of the decision to concentrate on battleship construction at the expense of other capabilities, leaving the United States with a strong but imbalanced fleet. The war at sea demonstrated that although in modern naval warfare the capital ship may be the concentration of power, or the yardstick of strength, it cannot operate alone against against a sophisticated opponent.

Even without a climactic naval battle WW I provided the U.S. Navy many invaluable lessons. These tactical lessons and technological innovations were incorporated in the design of the fleet. Auxiliary ships were built for



specialized functions such as anti-submarine warfare (ASW) and minesweeping operations, while refinements in ship design greatly improved the capability of the fleet. With all of the changes, the battleship remained the capital ship. However, the size, power, protection, range and speed were appreciably increased over its prewar cousins. The most significant improvement was in naval gunnery, made possible by stabilization and fire control mechanisms that extended the range of the battleships largest guns to 35,000 yards, nearing the ballistic limit of explosive propulsion munitions.

#### Between World Wars

Although the United States emerged from WW I considerably stronger than she had entered, so had its largest post-war competitor, Japan. America's two ocean frontier forced it to build a fleet that could protect interests in both theaters. Accordingly, the total U.S. fleet had to be considerably larger than Japan's.

The U.S. planned to restart its capital ship building program immediately to incorporate the latest tactical and technical lessons learned from the war. However, post-war sentiments from within the country and pressure from competitors outside the country prompted negotiations to curb the race for the largest navy. In order to limit the naval arms race, England, Japan, Italy and France met with the United States to forge an acceptable agreement on

capital ship ceilings. The result was the unprecedented Washington Conference of 1921.

The conference produced three treaties that would have a profound impact on the posture of the U.S. Navy as it entered WW II. The most significant was The Five-Power Naval Limitation Treaty. It scrapped specified ships already afloat or under construction for each of the signatories and banned capital ship (battleship) construction for ten years. It imposed a ratio of capital ships for the United States, Britain and Japan at 5:5:3 and further defined maximum allowable guns for battleships, aircraft carriers and cruisers. However, there were some notable exceptions allowed for each of the signatories. For the United States the most important was the exemption allowing the continuation of construction of two aircraft carriers, the *Lexington* and *Saratoga*.

The London Conference of 1930 extended the ban on capital ship construction until 1936. Therefore, by 1936, the end of the ban period, the older U.S. battleships had become obsolescent and the Navy faced a serious shortage of the newer battleships it required to execute its Pacific war plans.

In 1933, in part to ease the economic crisis of the American steel industry, Congress authorized the accelerated construction of cruisers, destroyers and smaller auxiliary craft. In 1934, funding was increased again for the expanded Navy. As the anticipated war in the Pacific drew closer,

capital ship construction was renewed in authorizations of the 1938 and 1940 naval bills.

#### World War II: The Aircraft Carrier

The Japanese attack at Pearl Harbor only temporarily destroyed the U.S. battleship fleet in the Pacific but the effect was far more reaching. The battleship lost its position as the capital ship of the U.S. Navy permanently. Although six of the eight battleships damaged at Pearl Harbor returned to service<sup>14</sup>, they no longer served as "the ship-type around which the tactics of the fleet are formulated". The aircraft carrier was the new capital ship of the U.S. Navy.

The temporary crippling of the U.S. Pacific battle line suddenly elevated America's six carriers, the *Saratoga*, *Lexington*, *Enterprise*, *Yorktown*, *Wasp* and *Hornet*, to the status of capital ships and not...mere reconnaissance vessels or auxiliaries to the battle line. The 34-knot carriers could not in any event have operated with the 21-knot battleships. In the next few months the carriers, escorted by swift, new cruisers and destroyers, were to prove themselves...convincingly as the queens of battle...<sup>15</sup>

Even with the dramatic loss of battleships at Pearl Harbor, the sudden ascendancy of the aircraft carrier as the capital ship could not have been possible without a considerable prewar investment in its tactical and technological development. This, of course, was an unexpected and serendipitous by-product of the naval

limitation treaties. Since the treaties prohibited capital ship (battleship) construction for over fifteen years, the Navy applied the available time and resources to experimentation with new technology and operational concepts. This experimentation resulted in the aircraft carrier and the carrier battle groups.

Initially, the "battleship admirals" viewed naval aviation as a supporting arm that would increase the reconnaissance capability of the fleet. But, as technology expanded the capabilities of aircraft and the aircraft carrier, the role of sea based naval aviation grew as well. The battle group centered around the aircraft carrier could strike with greater range, power and flexibility than could the battleship's big guns.

American plans for war with Japan, even before the attack on Pearl Harbor, envisioned a systematic drive across the Pacific to isolate the enemy's remote outposts, separate it from critically needed supplies, and sever its lines of communication. Japan would eventually be defeated by an ever-tightening ring of U.S. bases that would bring the war continually closer to the Japanese homeland and denying the enemy freedom of the seas, its lifeline for existence. To execute this strategy the U.S. Navy planned to employ its powerful battleship fleets supported by aircraft carriers to seize forward bases and destroy the Japanese Navy, thus seizing command of the sea and defeating the enemy. The

vision for the conduct of the war was more accurate than the one for the tools used in its execution.

By the summer of 1943, when the new fleet began to arrive in the Pacific, it was an entirely new concept from the battleship-centered one of prewar years. Spearheaded by the Fast Carrier Task Force...[it] seized and held command of the air and sea...<sup>16</sup>

By the end of the war the roles of the aircraft carrier and battleship were reversed. The aircraft carrier, designed to support the battleship-centered fleet was now the capital ship supported by the battleship.<sup>17</sup> In the vastness of the Pacific with its numerous island chains the aircraft carrier had been ideally suited for the conduct of the war.

#### Post World War II-Present: Evolution of the Aircraft Carrier

The U.S. Navy emerged from WW II as the strongest navy in the world with a wartime heritage unmatched by any other nation. Yet the power and prestige gained through the war were overshadowed by a new era ushered in by the atomic bomb.

Although the new capital ship, the aircraft carrier, had proven its value in combat, contemporary wisdom questioned the value of any surface fleet in the nuclear era. Air power advocates stressed that armies and navies were now relatively insignificant; nuclear weapons delivered by long range bombers made conventional forces outdated. The potential destructiveness of atomic weapons would deter war. But, if for some unimaginable reason an enemy provoked

a war it would be quickly ended by air power. This fundamental notion of "massive retaliation", incorporating the idea that the Soviet Union would be the most likely enemy, was the major consideration in the design of the post WW II Navy. The Soviet Union, traditionally a strong continental power, did not pose a significant naval threat. Therefore, the most efficient utilization of defense resources would be to steer the defense budget towards building a strategic air force at the expense of a now less relevant navy.

To ensure that its national defense role was not eroded by the new Air Force-oriented "massive retaliation" strategy, the Navy adapted to the nuclear age by designing larger aircraft carriers capable of launching longer ranged nuclear-armed aircraft. The idea of a sea-based nuclear force was the genesis of a new concept for the modern Navy.

By 1955 the Navy began to search for a more effective method of executing a nuclear deterrent/strike mission from a sea-based platform; the air wings of the large attack aircraft carriers' were insufficient for this role.<sup>18</sup> The solution was found in the development of intermediate range ballistic missiles (IRBM). By 1960 the Navy had successfully integrated the technology of a subsurface launched IRBM with that of a nuclear powered submarine to provide an effective and survivable third leg in the nuclear triad.<sup>19</sup> The sea-based IRBM, cheaper and less vulnerable than a manned aircraft, would provide a flexible and unique

dimension to the nuclear deterrent/strike force-- and give the Navy an additional and distinct mission. It would seem that the strategic significance of the nuclear-powered ballistic missile submarine (SSBN) would make it the new capital ship, replacing the aircraft carrier. Or, at least, it would become a capital ship on a par with the aircraft carrier, because the Navy now had two distinct missions: the SSBN for the nuclear deterrent/ bombardment mission and the aircraft carrier for the traditional mission of command of the sea. However, considering our definition of the capital ship, several discriminating elements preclude the SSBN from assuming that role.

The definition states in part that the capital ship is "the index of naval strength", "the ship-type around which the tactics of the fleet are formulated". When the SSBN's were initially deployed in the early 1960's as the third leg of the strategic triad, it seemed logical to incorporate all three of the "legs" under a unified command. Knowing that it would not have command of the unified force, and balking at the idea of its ships being commanded by a non-naval commander, the Navy successfully resisted the concept.<sup>20</sup> Instead of integrating all strategic nuclear forces under a unified command, the American approach has been to integrate their effects by a Single Integrated Operations Plan (SIOP). The SSBN, still under Navy command, performs a strategic mission as part of the U.S. strategic nuclear triad. Therefore, the "index of strength" that it represents is not

a naval strength but an index of nuclear power projection launched from a sea-based platform. Its weapons are not designed to have a maritime effect but rather, in conjunction with the manned bombers and land-based ICBM's, a strategic continental effect.

Neither is the nuclear powered ballistic submarine a "ship-type around which the tactics of the fleet are formulated". This part of the definition implies an integrated functioning of ships (surface and subsurface) and aircraft with a single aim. The SSBN does not operate as part of an integrated fleet but as an autonomous element. Its independence from other ships does not place it physically or tactically at the center of a fleet.

As powerful and significant as the SSBN is, it is not a capital ship. Instead, "[t]he aircraft carrier [has] continued as the capital ship for the U.S. Navy's all purpose force"<sup>21</sup> With many refinements since the end of WW II, the offensive posture of the U.S. Navy is still reflected in its carrier battle groups centered around the modern aircraft carrier.

#### The Definition Revisited

The definition proposed at the start of this paper has served as point of departure for viewing the evolution of the capital ship in the U.S. Navy. The definition stated that the capital ship is "the index of naval strength" and



is "the ship-type around which the tactics of the fleet are formulated".

The study of the evolution of the capital ship shows that at each stage in the development of the Navy, the capital ship is in fact the "index of naval strength" and "the ship-type around which the tactics of the fleet are formulated". As a commerce raider, a coastal blockader, or a central warship for seizing command of the sea, the capital ship is a reflection of mission, threat, geography, technology, and resources and so the index of a nation's naval strength. The sophistication of the fleet increases as technological innovations required the incorporation of specialized ships to execute specific functions. The capital ship is "the ship-type around which the tactics of the fleet are formulated".

While these two elements are part of the definition of capital ship, the complete concept requires a broader view. When the mission of the Navy was to defend the coast, the capital ship was the gunboat. When the capital ship was the gunboat, the force itself could do nothing more than defend the coast. Therefore, the capital ship reflected the Navy's mission, and in turn, defined the Navy's abilities. The capital ship is both creation and creator of naval operational doctrine.

In sum, whatever the mission of the navy, the capital ship is the ship that is the concentration of naval power,

the tactical centerpiece of fleet operations and the ship-type around which the posture of the navy is built.

Command of the Sea, The Capital Ship and The posture of  
the Navy

The mission of the Navy has been and remains to seize and maintain command of the sea, thereby establishing the conditions to project power (land, sea and air) across the broad range of oceans. Inherent in that notion are two separate objects: to secure the ability to transverse portions of the oceans and to deny the enemy that same ability. "Command of the sea has never meant a control which was either complete in degree or unbounded in maritime space. It has meant only that the efforts of one of the belligerents to control sea-borne communications over certain areas have been on the whole successful."<sup>22</sup>

The ultimate expression of command of the sea is in the Mahanian concept of the "big battle" where the opposing battle fleets, comprised of powerful capital ships, are engaged in a climactic, decisive battle resulting in the complete destruction of the vanquished force. The outcome of the "big battle" is a permanent solution to the command of the sea issue. Once the enemy fleet is "smitten down", the victor can move about the ocean with relative impunity, freeing his fleet to execute other missions and/or engage in action in other theaters.

Although the climactic naval battle is the decisive means of gaining command of the sea, historically it is not the most common method; in fact it is a relatively rare occurrence. What happens when the inferior fleet refuses battle and opts to remain out of the superior fleet's reach? Even without battle the inferior enemy fleet can be blockaded in its ports or within its home waters rendering it ineffective. Command of the sea, then, is obtained by denying the enemy access to portions of the ocean he must control to achieve his end. An example of this type of naval campaign is found in the Civil War where the Union Navy effectively contained Confederate naval and merchant ships in their ports and coastal waters. Only at great risk could Confederate ships gain access to the high seas, their lifeline for survival. The blockade was not "complete in degree". Many ships were able to "run" the blockade, but the cumulative effect of the blockade virtually eliminated Confederate sea power.

As in the previous example, a close blockade restricts the enemy to a small ocean area. However, the technological innovations that have increased the fleets area of influence, particularly radar, aviation and surface to surface missiles, have also made the close blockade almost unattainable. While a distant blockade allows the enemy a greater freedom of movement, it still achieves the same end of denying the enemy the access to the central ocean area. Restrictive geographical features such as straits or narrows

can be used to keep the enemy out of areas vital to achieving his end. The Battle for the Atlantic in the Second World War is an example of a distant blockade. The superior battle fleets of the Allied navies successfully contained the German High Seas Fleet (surface fleet) in the North Sea by using the Dover Straits and the narrows formed by Greenland, Iceland, and the United Kingdom to restrict German access to the North Atlantic. Although the German Navy had some freedom of movement in the North Sea, its surface fleet was denied the ability to enter the North Atlantic to interdict Allied convoys.

At this point it may appear that the decision at sea has a predetermined outcome in favor of the opponent with the most powerful fleet. However, this is not always the case as demonstrated by the U.S. victory in the Battle of Midway in 1942. In that action and throughout the history of naval warfare, the foremost principle is "concentration". By concentrating the naval power of a numerically inferior fleet against a portion of a relatively larger fleet, the larger fleet can be gradually reduced, and in time, defeated. Having the ability to concentrate naval power means having the initiative. Only by seizing and holding the initiative can one concentrate its forces (power) when and where it chooses. Without the initiative, the defender, not knowing when or where the attack will come, diffuses his forces (and power) to protect his vulnerabilities, thus

leaving him vulnerable to an attack by a concentrated naval force.

For a maritime nation like the United States, command of the sea is essential to maintain economic communications or to project power away from its shores whether it be land, sea or air power. From its historical experiences, seizing command of the sea requires the U.S. Navy to be offensively postured so that early in the conflict it can seize the initiative. That posture is a reflection of and is reflected in the capital ship.

The Navy's mission of command of the sea has expanded as economic and military influence has increased. In the earliest days of the Navy, command of the sea meant only that U.S. merchantmen could sail in distant seas with little risk and that American shores were defended from attack. That defensive mission provided the foundation for the design of the capital ship and in turn the posture of the Navy.

As the United States grew economically and militarily it slowly took a place among the powers of the world. Its command of the sea mission grew to include a greater ocean area to control. The U.S. could not defend its interest at home and abroad with a defensive navy. Instead, it built capital ships capable of offensive operations. Again the design of the capital ship was molded by technology, threat, geography and resources. Again, the capital ship reflected the posture of the Navy and the nation.

By the end of WW II the United States alone was the surviving world naval power. Its naval might and posture were manifested in the capital ship, the aircraft carrier. That heritage lives today.

For two decades the Navy remained unchallenged, but by the early 1960's the Soviet Union's growing naval strength began to threaten American supremacy on the seas. Today the Soviet Union stands as a first class naval power ready to counter American naval strength. As a continental power not a maritime one, the Soviet Union does not require command of the sea to meet its strategic aims. Rather, at present the Soviet Navy is tailored to deny the U.S. command of the seas and thus its ability to project power.

Proper force design requires that the direction of the armed forces be aimed at war with the most dangerous potential enemy--at present the Soviet Union. But our military history since WW II has been marked by local limited wars, not general war. Consideration must be given to the posture of the fleet based not only on the most dangerous threat but the full spectrum of potential U.S. involvement in other conflicts.

The defense policy of the United States requires military forces that are organized, manned, trained and equipped to deter and, if necessary, defeat aggression across the entire spectrum of conflict...The overall size and composition of our armed forces are strongly influenced by these requirements<sup>23</sup>

This leaves the Navy with a dilemma. Is the general purpose force centered around the strike aircraft carrier the proper one for deterring and perhaps fighting a potential war with the Soviet Union, while simultaneously being able to respond to the limited wars that have plagued the U.S. for the last half century? Or, put another way, does the Navy have the correct capital ship?

The United States, being an insular nation heavily dependent upon use of the sea lanes which lace the world's oceans, has built a navy designed to ensure unfettered use of those highroads of maritime commerce and overseas military communication. That navy has also been structured to project American power across Mahan's "broad common" to protect American interest and allies against enemy threats materializing distant from U.S. shores. Thus, the U.S. Navy has been crafted to control the seas, where and as necessary, to insure successful accomplishment of the nation's international aims.<sup>24</sup>

Although von Moltke was addressing the strategic positioning of land forces with the remark "an error in the original concentration of armies can hardly be corrected during the whole course of the campaign", the same truth can be applied to the Navy. An error in the posture of the Navy can hardly be corrected during the whole course of the war. Unless contemporary prewar conditions provide a situation like the interwar years did with the development of the aircraft carrier, the posture of the Navy at the onset of conflict, right or wrong, is how it will fight the war.

## Conclusion

The study of the evolution of the capital ship in the U.S. Navy provides a definition much greater than the prior view that it is the largest, most powerful ship in the fleet. It has demonstrated that the capital ship is the index of naval strength and that, tactically, the fleet is centered around it. But most importantly it has proven that there exists a reciprocal condition where the capital ship is both creator and creation of the operational and strategic posture of the Navy.

It has also been shown that there are five interrelated elements; mission, threat, geography, technology, and resources that establish the foundation for the design of the Navy and thus, the capital ship. These elements are seldom static, generally in flux, and rarely in the same relative proportion in their impact on the design of the Navy and its capital ships.

For the United States, a maritime nation, command of the sea is essential to project power away from its shores to protect its international interests. This study concludes that the posture of the Navy must be offensive to seize command of the sea. Moreover, due to the broad range of potential conflicts the structure of the Navy must consider not only the most dangerous but also the most likely threat. This causes a great dilemma namely that the uncertainties inherent in preparing for that broad range of conflict will require the Navy to make a judgment as to its



posture and its capital ship. That judgment, right or wrong at the onset of hostilities, can hardly be corrected during the whole course of the war.

## ENDNOTES

1. Clark Reynolds, *Command of the Sea* (New York: William Morrow and Company, 1974), p. 1.

2. Also called Humphrey frigates after their designer Joshua Humphrey. These were the type-ship of the first frigate design for the U.S. Navy. Funding for their construction was authorized in 1794. The first three (*USS Constellation*, *Constitution*, and *United States*) were launched in 1797; the second three (*USS President*, *Congress* and *Chesapeake*) in 1799.

3. Bernard Brodie, *A Guide to Naval Strategy* (Princeton: Princeton University Press, 1958), p. 18.

4. Alfred T. Mahan, *The Influence of Sea Power Upon History* (Boston: Little, Brown and Company, 1890), p. 138.

5. Reynolds, p. 9.

6. George T. Davis, *A Navy Second to None* (New York: Harcourt, Brace and Company, 1940), p. 482. A specific example is the *USS Essex* at 27,000 tons.

7. E.B. Potter, *Sea Power* (Annapolis: Naval Institute Press, 1981), p. 85.

8. Reynolds, p. 322.

9. William E. Livezey, *Mahan On Sea Power* (Norman: University of Oklahoma Press, 1981), p. 234.

10. Mahan, p. 138.

11. Davis, p. 94. These ships displaced 10,280 tons, could cruise at 16 knots and mounted four 13-inch, eight 8-inch, and four 6-inch guns.

12. Ibid., p. 93.

13. Ibid., pp. 86-88. The naval bill of 1892 authorized one battleship, 1895, two and 1896, three.

14. Of the eight battleships damaged at Pearl Harbor: the *USS Arizona*, *Oklahoma*, *Tennessee*, *West Virginia*, *Maryland*, *California*, *Pennsylvania* and *Nevada* all but *Arizona* and *Oklahoma* were to see action in the war.

15. Potter, p. 289.

16. Reynolds p. 542.

17. Wayne P. Hughes, *Fleet Tactics* (Annapolis: Naval Institute Press, 1986), pp. 88-89.

18. Rear Admiral William F. Raborn was commissioned by the CNO, Admiral Burke, to head the Special Projects Office to experiment and develop methods to fire intermediate range nuclear missiles from sea-based platforms in mid-1955. Not until warhead size was sufficiently reduced, solid propellants were incorporated, and guidance systems perfected did the first sea-based missile become operational.

19. The first two Polaris firing submarines were converted attack submarines, the *USS George Washington* and *USS Patrick Henry*. On 20 July 1960, the *USS George Washington* fired the first underwater ICBM. Potter, p. 370.

20. Incidentally, the Soviet Military is divided into five services: Army, Navy, Air Force, Air Defense Forces and Strategic Rocket Forces (SRF). It is believed that their SSBN's belong to the commander of SRF and not to the Navy thus having a single commander over all strategic nuclear forces.

21. Potter, p. 379.

22. Brodie, p. 74.

23. President Ronald Reagan, *The National Security Strategy of the United States*, (The White House: 1987) p. 19.

24. Robert J. Hanks, *American Sea Power and Global Strategy*, (Washington: Pergamon-Brassey's, 1985) p. 83.

## BIBLIOGRAPHY

### BOOKS

- Alford, Jonathan, (Ed.) *Sea Power and Influence*. Montclair, New Jersey: Allanheld, Osmun and Company, 1980.
- Beach, Edward L. *The United States Navy: 200 Years*. New York, New York: Henry Holt and Company, 1986.
- Brodie, Bernard. *A Guide to Naval Strategy*. Princeton, New Jersey: Princeton University Press, 1958.
- Cable, James, *Diplomacy at Sea*. Annapolis, Maryland: Naval Institute Press, 1985.
- Davis, George T. *A Navy Second to None*. New York: Harcourt, Brace and Company, 1940.
- Dupuy, Trevor N. *The Evolution of Weapons and Warfare*. Fairfax, Virginia: HERO Books, 1984.
- Earle, Edward M. *Makers of Modern Strategy*. Princeton, New Jersey: Princeton University Press, 1943.
- Frere-Cook, Gervais and Macksey, Kenneth, *The Guinness History of Sea Warfare*. Enfield, Middlesex: Guinness Superlatives Limited, 1975.
- Gray, Colin S. *Maritime Strategy, Geopolitics, and the Defense of the West*. New York: Ramapo Press, 1986.
- Guertiz, E.F. (et. al.) *NATO's Maritime Strategy: Issues and Developments*. Washington: Pergamon-Brassey's Publishers, 1987.
- Hanks, Robert J. *American Sea Power and Global Strategy*. New York: Pergamon-Brassey's Publishers, 1985.
- Hughes, Wayne P. *Fleet Tactics, Theory and Practice*. Annapolis, Maryland: Naval Institute Press, 1986.
- Hyatt, A.M.J. (Ed.) *Dreadnought to Polaris*. Annapolis, Maryland: Naval Institute Press, 1973.
- Livezey, William E. *Mahan on Sea Power*. Norman, Oklahoma: University of Oklahoma Press, 1981.
- Luttwak, Edward N. *Strategy, The Logic of War and Peace*. Cambridge, Massachusetts: The Belknap Press of Harvard University Press, 1987.

- Luttwak, Edward N. *The Pentagon and the Art of War*. New York: Simon and Schuster Publication, 1985.
- Mahan, Alfred T. *The Influence of Sea Power Upon History 1660-1783*. Boston, Massachusetts: Little, Brown and Company, 1890.
- Potter, E.B. (Editor). *Sea Power*. Annapolis, Maryland: Naval Institute Press, 1981.
- Reynolds, Clark G. *Command of the Sea*. New York, New York: William Morrow and Company, 1974.
- Rosinski, Herbert. *The Development of Naval Thought*. New Port, Rhode Island: Naval War College Press, 1977.
- Rouse, F.C. (Editor). *To Use the Sea, Readings in Seapower and Maritime Affairs*. Annapolis, Maryland: Naval Institute Press, 1977.
- Ryan Paul B. *First Line of Defense*. Stanford, California: Hoover Institution Press, 1981.
- Tritten, James J. *Soviet Naval Forces and Nuclear Warfare*. Boulder, Colorado: Westview Press, 1986.
- Tsipis, Kosta (et. al.) Eds. *The Future of the Sea-Based Deterrent*. Cambridge, Massachusetts: The MIT Press. 1973.
- Weigley, Russell, F. *The American Way of War*. Bloomington, Indiana: Indiana University Press, 1973.

#### ARTICLES

- Baker, A.D. "The Soviet Navy: An Update-The Aircraft Carrier." *U.S. Naval Institute Proceedings*. December, 1985, pp. 52.
- Clark, Glenwood, "Designing the Fleet of the Future." *Sea Power*. December, 1987, pp. 9-19.
- Dalglish, D.D. "Trident and the Triad." *U.S. Naval Institute Proceedings*. June 1986, pp. 73.
- Eldred, B. "Amphibious Shipping in the 21st Century." *U.S. Naval Institute Proceedings*. June 1986, pp. 98.
- Fitzgerald, T.A. "Blitzkrieg at Sea." *U.S. Naval Institute Proceedings*. January 1987, pp. 33.
- Gray, Colin S. "Maritime Strategy." *U.S. Naval Institute Proceedings*. February 1987, pp. 34.

- Hura, M. "Cruise Missiles: Future Options." *U.S. Naval Institute Proceedings*. August 1986, pp. 49.
- Lehman, John F. "The 600-Ship Navy." *U.S. Naval Institute Proceedings*. January Supplement 1987, pp. 31.
- Mustin, H.C. "Maritime Strategy from the Deckplates." *U.S. Naval Institute Proceedings*. September 1986, pp. 32.
- Ortlieb, E.J. "Large Carriers: A Matter of Time." *U.S. Naval Institute Proceedings*. October 1986, pp. 48.
- Polmar, N. "The Soviet Navy: The Submarine Enigmas." *U.S. Naval Institute Proceedings*. January, 1987, pp. 128.
- Sears, S.L. "The SSN-Cruise Missile Problem." *U.S. Naval Institute Proceedings*. December, 1986, pp. 102.
- Trost, A.H. "Looking Beyond the Maritime Strategy." *U.S. Naval Institute Proceedings*. January, 1987, pp. 13-19.
- Watkins, J.D. "The Maritime Strategy." *U.S. Naval Institute Proceedings*. January Supplement, pp. 2.
- Weatherup, R.A. "The Next Fleet Action." *U.S. Naval Institute Proceedings*. October 1986, pp. 124.
- West, F.J. "The Maritime Strategy: The Next Step." *U.S. Naval Institute Proceedings*. January, 1987, pp. 40-49.

#### THESES and REPORTS

- Clark, M.C. "The Battleship Battlegroup: An Operational Analysis." Annapolis, Maryland, US Naval Academy, 19 May 1987.
- Fuge, D.P. "SSN Employment in the Maritime Strategy." Newport, Rhode Island, Naval War College, 15 May 1987.
- Gray, C.S. "The Wartime Influence of Sea Power Upon Land Power." Fairfax, Virginia, National Security Research, March 1987.
- Hastings, E.E. "Alliances, Strategies and Warplans: Some Historical Examples and Current Questions." Newport, Rhode Island, Naval War College, 20 June 1986.
- Hendrick, W.S. "Rendezvous at the Bastions: A Look at Soviet Echeloned ASW (Anti-Submarine Warfare)." Newport, Rhode Island, Naval War College, 20 June 1986.

Kime, Steve F. "Soviet Naval Strategy for the Eighties."  
Washington, D.C., National Defense University, June  
1978.

Martin, C.L. "Tomahawk Technology and the Maritime Strategy:  
Potential Prospects and Problems." Newport, Rhode  
Island, Naval War College, 15 May 1987.

Snow, Rodger W. "The Emerging Red Tide". San Jose,  
California, San Jose State University, May 1981.

#### GOVERNMENT DOCUMENTS

Office of the President of the United States, *National  
Security Strategy of the United States*. The White  
House, January, 1987.

The Joint Staff, *The United States Military Posture FY 1988*.  
Washington, 1986.

United States Department of Defense, *Soviet Military Power*  
(Sixth Edition). Washington, U.S. Government Printing  
Washington, 1986.

END

DATED

FILM

8-88

DTIC